



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09 943,267      | 08/30/2001  | Keith Breinlinger    | 1424-US             | 8773             |

7590 04/23/2003  
Teradyne, Inc  
Legal Department  
321 Harrison Avenue  
Boston, MA 02118

EXAMINER

NGUYEN, TRUNG Q

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

2829

DATE MAILED: 04/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/943,267

Applicant(s)

BREINLINGER, KEITH

Examiner

Trung Q Nguyen

Art Unit

2829

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on 30 August 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1 ☐ Certified copies of the priority documents have been received.  
2 ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3 ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claim 27 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding claims 1 and 6, the specification and drawings as original filed do not provide support for "three-dimensional process".

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-13 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: as claimed in claims 1 and 6, a routing unit and conductor paths formed by a three-dimensional fabrication process. It is unclear what method/process applicant is intending to encompass since the specification and

Art Unit: 2829

drawings as original filed do not provide enough support for "three-dimensional fabrication process", wherein the three-dimensional process is a stereolithography or selective laser sintering or fused deposition modeling, it is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

For the examination purposes, the examiner is taking the position that the connection between the routing unit and conductor is a position, which permits electrical signals to propagate both horizontally and vertically via three-dimensional process.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Beaman et al. (U.S. 5,531,022), as best as the examiner is able to ascertain.

As to claims 1-3, 6-7 and 10-11, Beaman et al. disclose in Figures 1-2, 5-6 a three-dimensional high performance interconnection package having a routing unit 8 of Fig. 2, a plurality of conductor paths 20 of Figs. 1-2 wherein electrical conductor 28 of Fig. 1 routed through the conductor paths 20 of Fig. 1 and directed through the routing unit 8 and the plurality of conductor paths formed by

Art Unit: 2829

a three-dimensional fabrication process which permits electrical signals to propagate both horizontally and vertically (see abstract, Fig. 1). The structure is formed from a plurality of assemblies; each assembly is formed from a substrate having disposed on at least one surface a plurality of electronic devices (column 3, lines 20-42).

As to claims 4-5, Beaman et al. disclose in Figure 2 the routing unit 8 comprises a block of dielectric material 12 (column 3, lines 20-42), and a block of thermally conductive material (column 3, lines 45-50).

As to claims 8-9 and 15, Beaman et al. disclose in Figure 1 at least one of the pluralities of conductors comprises an optical conductor (see FIG. 22 schematically shows an optical system to form balls on the end of the wire conductors in FIG. 15). It is note that it would have been obvious to a person having ordinary skill in the art at the time of the invention was made to modify the electrical conductor to be an optical conductor or fluid conductor because it has been held that changes in shape and size or material are a matter of obvious design choice, absent any persuasive evidence that the change in configuration was significant.

As to claims 12-13, Beaman et al. disclose in Figures 1-2 the routing unit 8 is further formed with oppositely disposed planar surfaces 16 wherein the conductors 28 extend from one planar surface to the other planar surface (surface of 26 to 16) and include respective opposite ends terminated on each of the respective planar surfaces 16 or 26 of Fig. 1 to form respective first and second contact arrays (32 and 34 of Fig. 1 or 18 of Fig. 2). In addition, contact-

to-contact spacing can change in shape and size because it is just a matter of obvious design choice, absent any persuasive evidence that the change in configuration was significant.

As to claims 14 and 16, Beaman et al. disclose in Figures 1-2, 5-6 a hybrid conductor board via a semiconductor structure 2 of Fig. 1 having a routing unit 8 of Fig. 2, a plurality of conductor paths 20 of Figs. 1-2 wherein electrical conductor 28 of Fig. 1 routed through the conductor paths 20 of Fig. 1 and directed through the routing unit 8 and the plurality of conductor paths formed by a three-dimensional fabrication process which permits electrical signals to propagate both horizontally and vertically (see abstract, Fig. 1). The structure is formed from a plurality of assemblies; each assembly is formed from a substrate having disposed on at least one surface a plurality of electronic devices (column 3, lines 20-42); the routing unit 8 via device interface board for coupling planar surfaces 16 and adapted to connect to the one or more devices under test 94 or 96 of Fig. 6. The test head and computer workstation are inherited because it is required to have such a test head and a computer or any kind of device that collect the data of the test in order to complete the process of forming a three dimensional high performance interconnection package.

### ***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. As already mentioned, there are a number of prior art

references dealing with the use of hybrid conductor-board for signal conductor routing; only a representative sample is cited herein.

*Grant et al. (U.S. 4,472,728) discloses an imaging X-ray Spectrometer.*

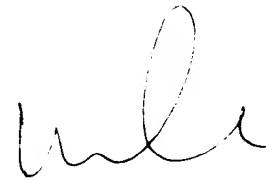
*Voldman et al. (U.S. 5,703,747) discloses a multichip semiconductor structures with interchip electrostatic discharge protection, and fabrication methods therefore.*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Trung Nguyen whose telephone number is 703-305-4925. The examiner can normally be reached on Monday through Friday, 8:30AM – 5:00PM. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-5841. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cuneo Kammie can be reached at (703) 308-1233.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)-308-0956.

*Trung Nguyen*

Patent Examiner  
Art Unit 2829  
703-305-4925



U